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ABSTRACT

A study evaluated the effects of Strong Interest Inventory (SII) completion and participation in a theoretically based model of SII feedback/interpretation on the social cognitive career beliefs of 99 first-year students at a southwestern university. The Career Decision-Making Self-Efficacy Scale--Short Form (CDMSES-SF) measured each participant's degree of belief that he or she can successfully complete tasks necessary for making effective career decisions. Career beliefs of participants were measured by the Career Beliefs Inventory. Participants completed both instruments and were randomly assigned to either the SII feedback condition, control, or SII completion-only group. Students who completed the SII and participated in the feedback session were more likely to believe that they are personally responsible for career decision making than were students who completed the SII without feedback. Students who completed the SII with or without feedback were more likely to believe that career success and satisfaction were the result of hard work and effort than were the control group. There were no significant differences in a sense of control over career decision making among the three groups. (Appendixes include 37 references and 2 tables.) (YLB)

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Running head: EFFECTS OF STRONG INTEREST INVENTORY FEEDBACK

Effects of Strong Interest Inventory Feedback on Career Beliefs*

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Effects of Strong Interest Inventory Feedback on Career Beliefs

The Use of the SII in Career Counseling

Results of a recent survey of vocational assessment practices indicated that the Strong Interest Inventory (SII; Consulting Psychologists Press, 1994) is used more frequently by counselors than any other career interest inventory (Watkins, Campbell, & Nieberding, 1994). Furthermore, when counselors are asked which vocational tests they believe that graduate students should learn about, the SII is the most frequently recommended (Watkins, 1993). It is no wonder, then, that the SII has been and continues to be the subject of much research and practical attention.

Results of various studies have consistently revealed that completion of the SII coupled with feedback about one's results (i.e., interpretation) effectively influences career information-seeking behavior, vocational identity, range of perceived career options, occupational certainty, and job satisfaction (Croteau & Slaney, 1994; Jepsen, 1995; Randahl, Hansen, & Haverkamp, 1993; Slaney, 1983; Slaney & Lewis, 1986).

Purpose of this Study

Despite the results of previous investigations supporting the use of the SII as a method for increasing information-seeking behavior, vocational identity, range of perceived career options, and occupational certainty, there is a paucity of research investigating the effects of SII administration on social cognitive factors in career development, such as clients' career self-efficacy and their sense of control over and responsibility for career decision making. Also lacking in the literature are investigations that couple interest inventory administration with a clearly delineated, theoretically-based program of feedback and interpretation. Furthermore, no published studies to date of which we are aware have evaluated the effects of SII feedback using the 1994 version of the SII.

Although it may seem obvious that completing the SII and receiving subsequent feedback and interpretation of results would be more beneficial than simply completing the inventory, there have not been any empirical efforts to validate such a claim. Additionally, there have been relatively few investigations evaluating the effects of career counseling interventions on the social cognitive career beliefs of clients. Therefore, the purpose of the following investigation is to evaluate the effects of SII completion and participation in a theoretically-based model of SII feedback and interpretation on the social cognitive career beliefs of first-year college students.

Career Decision-Making Self-Efficacy in Career Development

One of the social cognitive domains in career development that is likely to be affected by completing the SII and participating in a group feedback and interpretation session is career decision-making self-efficacy (CDMSE). The construct of CDMSE stems from Bandura's (1977) self-efficacy theory. Self-efficacy expectations are hypothesized to be the primary mediators of behavior and behavior change, influencing whether a specific behavior will be initiated, how much effort will be expended, and how long the behavior will be maintained in spite of obstacles (Bandura, 1982, 1986, 1997). Application of self-efficacy theory to the career decision-making

process is based on the idea that low levels of CDMSE lead to the avoidance of career decision-making tasks and behaviors, whereas high levels of CDMSE lead to increased participation in career decision-making activities (Luzzo, 1996; Taylor & Betz, 1983). Because interventions that successfully increase the CDMSE of college students could potentially result in additional career decision-making advantages, there has been a call for research to evaluate the effects of counseling interventions on the CDMSE of students (Betz, 1992; Betz & Luzzo, 1996).

According to Bandura (1977, 1982, 1986, 1997), there are four sources of information that directly influence an individual's self-efficacy expectations: performance accomplishments, vicarious experience, verbal persuasion, and emotional arousal. Of the four sources of self-efficacy information, performance accomplishments have been hypothesized to be the most influential source because they are based on personal mastery (Bandura, 1982, 1986, 1997). Successful experiences raise mastery expectations (i.e., self-efficacy), whereas repeated failures lower them. Bandura noted that improvements in a given area that result from performance accomplishments often transfer ". . . not only to similar situations but to activities that are substantially different from those on which the treatment was focused" (p. 195). When students who are undecided about their career aspirations complete an interest inventory and receive appropriate feedback and interpretation, they are likely to view such an experience as a "successful" endeavor in career decision making. Hence, engaging in the interest inventory completion and feedback process serves as a direct source of performance accomplishment. Consequently, college students who are undecided about their career goals and who complete the SII and receive appropriate feedback might be expected to exhibit significant increases in CDMSE.

Observed changes in CDMSE should be even more pronounced when additional sources of self-efficacy information are employed. A group feedback and interpretation session that incorporates verbal persuasion might prove especially useful as a method of increasing students' CDMSE. Bandura (1977) described verbal persuasion as a way of leading people, through suggestion, into believing that they can successfully cope with activities that have overwhelmed them in the past. College students who are undecided about their career goals are often overwhelmed with career decision-making tasks (e.g., selecting a major, narrowing career options) and, as such, are likely to possess low levels of CDMSE (Betz & Luzzo, 1996; Taylor & Betz, 1983). Yet combining verbal persuasion with the performance accomplishment of successfully completing an interest inventory may contribute to positive changes in CDMSE. As Bandura explained, ". . . people who are socially persuaded that they possess the capabilities to master difficult situations and are provided with provisional aids for effective action are likely to mobilize greater effort than those who receive only the performance aids" (p. 198). It is for this reason that Bandura (1977, 1986, 1997) has recommended experimental consideration of the combined effects of verbal persuasion and performance accomplishments on self-efficacy.

Role of Career Beliefs in Career Development

Krumboltz (1991b) recently identified 25 different career-related beliefs that are hypothesized to play an integral role in the career development of college students. Three of those career beliefs--control, responsibility, and working hard--seem most likely to be affected by participating in a group interest inventory feedback and interpretation session that incorporates

both performance accomplishments and verbal persuasion components. College students--particularly those who are undecided about their career goals--who invest the amount of time required to complete an interest inventory and receive feedback about their results are more likely to begin to realize that they are personally in control of and responsible for career decision-making progress than students who do not participate in such an activity. This is especially true when students receive a treatment that includes a verbal persuasion component designed to encourage them to expend adequate amounts of time and energy into the career decision-making process. As college students begin to recognize that accomplishing career goals is at least somewhat dependent on their willingness to engage in career exploration activities that involve a significant personal investment, it seems likely that increases in their sense of control over and responsibility for making career decisions, as well as an increase in their belief that career decision making requires hard work and effort, will follow.

Experimental Hypotheses

Based on theoretical postulates forwarded by Bandura (1977, 1982, 1986, 1997) and results of previous research evaluating the effects of SII administration in career development (Croteau & Slaney, 1994; Jepsen, 1995; Randahl, Hansen, & Haverkamp, 1993; Slaney, 1983; Slaney & Lewis, 1986), it was expected that college students who complete the SII and participate in a social cognitive-based group feedback and interpretation session will exhibit increases in CDMSE and beneficial changes in their career beliefs relative to students who complete the SII and do not receive feedback and those who do not complete the SII at all (i.e., students in the control group).

Method

Participants

First-year students enrolled in a new student orientation course at a medium-sized public university in the Southwest were invited to participate in the study. Students were informed that participation in the study would provide them with the opportunity to learn more about their career interests. Specifically, students who were undecided about their career choice and were having difficulty narrowing their career options were encouraged to participate. No other incentive for participation (e.g., course credit) was offered. The participants included 64 women and 35 men whose ages ranged from 18 to 22 (M = 18.37, SD = 0.75) and included 53 Caucasians, 36 Mexican Americans, 5 African Americans, 3 Central Americans, and 2 Native Americans.

Materials

The Career Decision-Making Self-Efficacy Scale--Short Form (CDMSES-SF; Betz, Klein, & Taylor, 1996) was used to measure participants' CDMSE. The CDMSES-SF evaluates an individual's degree of belief that she or he can successfully complete tasks necessary for making effective career decisions. Completion of the CDMSES-SF requires respondents to indicate the degree to which they are confident in their ability to complete 25 different career decision-making tasks. Confidence ratings are made along a 10-point confidence continuum, ranging from 0 (no confidence at all) to 9 (complete confidence). Total scores on the CDMSES-

SF are determined by summing the numerical responses to each item. Higher scores indicate higher levels of CDMSE. Psychometric evaluations of the CDMSES-SF have revealed adequate reliability and validity of the scale (Betz et al., 1996; Betz & Luzzo, 1996).

Career beliefs of participants were measured by the Career Beliefs Inventory (CBI; Krumboltz, 1991a). The CBI consists of 96 items answered on a 5-point continuum from strongly disagree (1) to strongly agree (5) with about half the items being reverse scored. There are 25 different scales included in the CBI. Raw scores on each scale are converted to standard scores that range from 10 to 50, with higher standard scores indicating that the respondent generally agreed with the positive items included in that scale and disagreed with the scale's negative items. Lower scores for a given scale indicate at least some uncertainty about the belief represented by that scale. Only the three CBI scales that correspond with beliefs that are hypothesized to be directly influenced by SII interpretation (control, responsibility, and working hard) were examined in this investigation.

Cronbach's alpha reliability coefficients computed for the three CBI scales used in this study indicated adequate internal consistency: control alpha = .61, responsibility alpha = .60, working hard alpha = .73. Krumboltz (1991b) cited 3-month test-retest reliabilities for the control, responsibility, and working hard scales of the CBI of .50, .40, and .63, respectively, for a sample of college undergraduates. Results of studies with college students have shown that the CBI measures information that is not tapped by aptitudes, vocational interest or personality inventories (Holland, Johnston, Asama, & Polys, 1993; Naylor & Krumboltz, 1994). The CBI has been characterized as having "impressive construct validity" (Holland et al., 1993, p. 242) and adequate convergent and discriminant validity to support its use in research (Fretz, Spokane, Nagel, Hoffman, Jaschik-Herman, & Davison-Aviles, 1994).

Procedure

All participants completed the CBI and the CDMSES-SF in a counterbalanced order. Participants were then randomly assigned to either the SII feedback condition or to one of the other two conditions: control group or SII completion-only group.

Students assigned to the control group ($n = 25$) completed the CBI and CDMSES-SF a second time, approximately six weeks after the original administration of the measures, without any formal exposure to career exploration activities. These participants did not complete the SII until the conclusion of the investigation. Students randomly assigned to the SII completion-only group ($n = 22$) completed the SII approximately two weeks after initially completing the CBI and CDMSES-SF. Again six weeks after initial completion of the CBI and CDMSES-SF, these participants completed the two measures a second time (prior to receiving SII feedback). Students assigned to the SII feedback group ($n = 52$) engaged in the same process as those in the SII completion-only group except that they also participated in a group feedback and test interpretation session two weeks after completing the SII. Participants in the SII feedback group also completed the CBI and CDMSES-SF a second time, six weeks after initially completing the two measures. (There was a six week interval between pre- and posttesting of the CBI and CDMSES-SF for all participants.) Group interpretation sessions lasted approximately 50 min, and between 10 and 15 students were in attendance at each session.

Efforts were employed to ensure that students in the control and SII completion-only

groups were not disappointed that they did not receive the group interpretation. In fact, the participants in these two groups were unaware that other participants in the study received the complete treatment. Students assigned to the SII feedback and interpretation condition were specifically informed not to discuss their involvement in the project or any facet of the procedure until the completion of the study. All participants eventually completed the SII and participated in the group feedback and interpretation session following the data collection process (i.e., at the conclusion of the study).

The career counselor who conducted the SII feedback and interpretation sessions was a recent graduate of the university's counselor education program who had completed a career counseling practicum and was familiar with SII procedures. The counselor was not informed of the purpose of the investigation until all data were collected. Detailed protocol were developed to ensure a standard method of SII feedback and interpretation. After identifying himself as a graduate of the university's counselor education program, the career counselor briefly explained the background and purpose of the SII. He then distributed SII Profile Reports to all participants in attendance and invited students to take a brief look through their Profile Reports. The counselor then showed the video, Exploring Career Options with the Strong Interest Inventory (Hammer, 1994).

Exploring Career Options with the Strong Interest Inventory is a 19-minute video presentation intended to provide students with a basic overview of the SII and offer helpful strategies for engaging in an in-depth, individualized interpretation of results. The video presentation includes definitions and examples of the six General Occupational Themes which correspond with Holland's types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) and information about the meaning of each SII scale (i.e., the Basic Interest Scales, the Occupational Scales, and Personal Style Scales). The video includes numerous statements designed to assist clients in recognizing that the completion of the SII is a successful accomplishment in the career decision-making process. Also included in the videotaped presentation are several statements that encourage (i.e., verbally persuade) students to invest additional time and energy into the career decision-making process and emphasize the importance of personal responsibility for and control over career decision making.

After each video segment, the career counselor paused the video and answered students' questions about the information included in that particular segment. At the conclusion of the video presentation, the counselor asked students if they had any questions about their Profile. Following this question-and-answer period, the counselor distributed a copy of the Exploring Career Options with the Strong Interest Inventory Summary Sheet (Hammer, 1994, pp. 26-27) and a copy of the workbook, Where Do I Go Next? Using Your Strong Results to Manage Your Career (Borgen & Grutter, 1995), to each student in attendance. Where Do I Go Next? Using Your Strong Results to Manage Your Career provides an avenue for students to incorporate their individual results into a personalized system of career exploration and planning. The career counselor persuaded students to read through the booklet and complete the exercises therein sometime during the following week. The counselor repeatedly encouraged participants to realize that effective career decision making requires involvement in various career decision-making tasks (e.g., exploring career options, engaging in job shadowing experiences, attending career center workshops, learning about job search strategies). Finally, all students were invited to

schedule a meeting with the career counselor for one-on-one feedback and interpretation of the SII. All individual appointments were scheduled following posttest data collection.

Results

Correlation coefficients were calculated for the pre- and posttest measures of CDMSE and career beliefs. As shown in Table 1, weak-to-moderate correlations between CDMSE and each of the career beliefs were revealed, suggesting the relative independence of the CDMSE and career beliefs measures.

Career Decision-Making Self-Efficacy

An analysis of covariance (ANCOVA) with experimental condition as the independent variable, posttest CDMSES-SF scores as the dependent variable, and pre-test CDMSES-SF scores as the covariate yielded a significant effect of treatment on the CDMSE of participants, $F(2, 95) = 8.54$, $p < .01$. As shown in Figure 1, a Tukey post-hoc test revealed a significant difference in posttest CDMSE between students who completed the SII and received feedback ($M = 181.48$, $SD = 21.76$) and students in both the SII completion-only group ($M = 170.77$, $SD = 21.96$), effect size (d) = .49, and the control group ($M = 168.20$, $SD = 20.78$), $d = .64$.

Career Beliefs

A series of ANCOVAs with experimental condition as the independent variable, posttest career beliefs as the dependent variables, and pretest career beliefs as the covariates were conducted for the three career beliefs assessed in the study. (A Bonferroni correction was used to control for inflated Type I error: alpha = .05/3 = .016). As shown in Table 2, results of the ANCOVAs indicated a significant effect of treatment on the responsibility and working hard dimensions and the absence of an effect of treatment on the control dimension of career beliefs.

Although the results of subsequent Tukey post-hoc tests revealed the absence of a significant difference in posttest responsibility scores between students in the control group and students in the SII with feedback group, findings did indicate a significant difference in posttest responsibility scores between the SII with feedback and SII completion-only conditions (d = 1.06). Participants who completed the SII and participated in the feedback session reported greater posttest responsibility scores on the CBI than students who completed the SII but did not receive feedback about their results. For the working hard dimension, findings indicated a significantly higher posttest score among students in both the SII with feedback ($d = .67$) and the SII completion-only group ($d = 1.02$) relative to students in the control group.

Discussion

The use of a group interpretation strategy that incorporated sources of performance accomplishments and verbal persuasion as a means of providing SII feedback increased participants' CDMSE. Although asking students to complete an interest inventory and participate in a group feedback and interpretation session may not be the treatment of choice for increasing a client's CDMSE, results of the present investigation support such an activity as one effective method for doing so.

As expected, the self-efficacy enhancing strategies employed in the study also produced

significant changes in career beliefs. Students who completed the SII and participated in the feedback session were more likely to believe that they are personally responsible for making career decisions than students who completed the SII but did not participate in the session. This is probably best understood when realizing that students in the SII completion-only group had not yet been exposed to the video presentation and additional interaction with the career counselor. In other words, they were not exposed to the components of verbal persuasion and performance accomplishments, both of which are likely not only to increase students' CDMSE but also their sense of responsibility for making career decisions. Results also indicated that students who completed the SII--whether or not they participated in the feedback session--were more likely to believe that career success and satisfaction were the result of hard work and effort than students who did not complete the SII. Completing the SII requires a student to engage in an hour-long analysis of her or his vocational interests. By participating in this type of an assessment, students may begin to realize that career decision making is a process that requires some degree of "work" on their part. Although students in the SII completion-only group did not receive feedback prior to the posttest of their career beliefs, they may have been anticipating such feedback in the near future. The mere expectation that additional time might be spent reviewing SII results may have contributed to observed changes in the belief that working hard is an integral component to successful career decision making. Of course, such an explanation is merely speculation and requires further empirical validation.

Finally, results revealed the absence of any significant differences in a sense of control over career decision making among the three groups of participants. Although completing the SII and participating in the group interpretation session produced an increased sense of control among participants in the full treatment condition, this increase was experienced across all three experimental conditions. It may be that a college student's sense of control over career decision making increases as a mere consequence of being in the first semester of college. Completing an interest inventory and receiving subsequent feedback does not apparently provide students with any additional sense of control over the career decision-making process.

Counseling Implications

As counselors consider the use of vocational assessment in their work with clients, it is important to recognize that the use of interest inventories as part of a comprehensive career intervention program probably has much more value than the use of interest inventories in isolation (i.e., without a theoretically-driven system of feedback and interpretation). The present results--coupled with the findings of previous investigations (e.g., Croteau & Slaney, 1994; Jepsen, 1995; Randahl et al., 1993)--suggest the continued use of interest inventories as a means of helping clients foster appropriate attitudes and beliefs about the career decision-making process. As counselors select the types of inventories to use in their practice, they should take into account the specific needs of individual clients and the purpose of vocational assessment in the career counseling process. It is especially important for counselors to discover effective strategies for integrating interest inventories into a more comprehensive, theoretically-driven system of vocational assessment and career development (Spokane, 1991).

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Table 1

Correlation Matrix for the Dependent Variables (N = 99)

Variable	1	2	3	4	5	6	7	8	M	SD
Pretest										
1. CDMSE[a]		.43*	.47*	.36*	.39*	.12	.26*	.36*	163.51	19.95
2.Control[b]			.49*	.20	.44*	.39*	.36*	.25*	35.20	7.92
3. Responsibility				.42*	.43*	.50*	.56*	.45*	35.64	5.96
4. Working Hard					.06	.20	.42*	.39*	37.96	5.35
Posttest										
5. CDMSE						.14	.11	.16	175.75	22.21
6. Control							.40*	.45*	38.38	6.18
7. Responsibility								.42*	37.39	5.62
8. Working Hard									38.91	5.86

Note. *p < .05

[a]CDMSE scores range from 0-225, with higher scores indicating greater confidence in one's ability to engage in career decision-making tasks.

[b] Career belief scale scores range from 10-50, with higher scores indicating agreement with the positive items included in that scale and disagreement with the scale's negative items.

Table 2

Mean Pre- and Posttest Career Beliefs Scores as a Function of Treatment Condition

		Treatment Condition						
		Control Group		SII Completion-Only		SII with Feedback		
Career Belief		Pre	Post	Pre	Post	Pre	Post	Value of F[a]
Control	M	32.20	36.20	38.63	38.64	35.19	39.33	1.73
	SD	(7.92)	(5.26)	(6.76)	(7.74)	(7.92)	(5.69)	
Responsibility	M	34.48	36.72	34.91	34.36	36.50	39.00	5.20**
	SD	(6.06)	(5.29)	(4.52)	(4.39)	(6.40)	(5.73)	
Working Hard	M	37.60	35.72	39.55	41.36	37.46	39.40	5.98**
	SD	(5.07)	(5.52)	(6.11)	(5.37)	(5.12)	(5.66)	

[a]F (2, 95)

**p < .016.

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